January 1, 2015

Actuarial Valuation Report

Swampscott Retirement System

Lawrence B. Stone

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November 27, 2015

Swampscott Retirement Board
Town Hall
22 Monument Avenue
Swampscott, MA 01907

Dear Swampscott Retirement Board:

Stone Consulting, Inc. has performed a January 1, 2015 actuarial valuation of the Swampscott Retirement System. This valuation and report was prepared using generally accepted actuarial principles and practices. To the best of our knowledge, this report is complete and accurate, and the assumptions used represent our best estimate of anticipated experience of the system.

As part of performing the valuation, Stone Consulting, Inc. was furnished member data by the Swampscott Retirement System's administrative staff. Although examined for general reasonableness, the data was not audited by the actuary. In addition, the administrative staff furnished financial statements that were not audited by the actuary or by the plan's auditors.

The funding objective of the plan is to fully fund the system while attempting to maintain a stable contribution amount for the upcoming fiscal year that is consistent with prior funding schedules or if employer finances allow it, to increase the contribution amount. This funding objective is being met.

We anticipate over time the contribution level to remain approximately level as a percentage of payroll. The contribution rate is determined by adding the normal cost plus an amortization of the unfunded actuarial accrued liability. The normal cost is expected to remain at a level percentage of payroll. The length of the funding schedule contained in this actuarial valuation report is 15 years (fully funded by 2031). The amortization is set to increase by 4.00% each year.

The contribution amount for Fiscal Year 2017 is $5,012,346 which is $126,688 greater than the anticipated contribution amount from the prior funding schedule. PERAC and GASB guidelines indicate that actuarial valuations should be conducted every two years. GASB Statements No. 67 and 68 require annual updates for asset experience and cost allocation. The Swampscott Retirement Board conducted their previous actuarial valuation effective January 1, 2013.

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We are pleased to present the results of this valuation. If the Retirement Board has any questions on the content of this report, we would be glad to respond. Please note that this report is meant to be used in its entirety. Use of excerpts of this report may result in inaccurate or misleading understanding of the results.

I, Lawrence Stone, am a consultant for Stone Consulting, Inc. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,
STONE CONSULTING, INC.
Actuaries for the Plan

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Lawrence B. Stone
Member, American Academy of Actuaries

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Introduction

This report presents the results of the actuarial valuation of the Swampscott Retirement System. The valuation was performed at the request of the Retirement Board as of January 1, 2015 for the purpose of determining the contribution requirements for Fiscal Year 2017 and beyond. The contribution requirements are based on:

- The financial condition of the system as of December 31, 2014
- The benefit provisions of M.G.L. Chapter 32 and related statutes;
- The demographics of members in the system (i.e., active and inactive participants, retirees and beneficiaries as of January 1, 2015);
- Economic assumptions regarding salary increases and investment earnings; and
- Other actuarial assumptions (e.g., withdrawals, retirement, death, etc.)

January 1, 2015 Valuation Summary

	January 1, 2015	January 1, 2013	Change
Contribution Fiscal 2017	$5,012,346	$4,885,657	+$126,688
Funding Schedule Length (as of Fiscal 2017)	15 years	14 years	+1 year
Amortization increase	4.00%	3.92807%	+0.07193%
Funding Ratio	48%	44%	+4%
Interest Rate Assumption	8.00%	8.00%	No change
Salary Increase Rate Assumption	Same as previous	Select & 3.75% Ultimate plus steps: (see below)	No change

SALARY INCREASES (during select period)

Yrs. of Service	1	2	3	4	5
Groups 1 & 2	4.25%	3.75%	1.25%	1.25%	3.75%
Police	4.25%	9.25%	4.25%	9.25%	-
Fire	5.25%	5.25%	3.25%	-	-

- The Fiscal Year 2017 contribution is equal to the planned 2017 contribution. Stone Consulting, with agreement from the Retirement Board, values assets using a five-year asset smoothing method. In this approach, asset gains and losses are recognized over a five-year period. The purpose of this approach is to avoid wide swings in asset value from one year to the next.

- The System, over the two-year period from January 1, 2013 to December 31, 2014, experienced a 12.5% annual return on the market value of assets versus our assumption of 8.00%. There was a $3,185,382 net actuarial gain in calendar years 2013 and 2014. The System's asset portfolio, effective December 31, 2014 is approximately 83% equities and 17% fixed income and short-term investments. The interest rate assumption was maintained 8.00% to reflect anticipated future market performance.

- The salary increase assumption was maintained from the prior valuation. We used a select and ultimate table, which is outlined in the chart on the previous page. This assumption is based on expected future experience. Total compensation changed by 9.7% over the prior valuation; however average annual compensation (compensation divided by number of active members) only changed by 3.1%.

- The schedule length is fifteen (15) years, one year longer than the 14 years remaining from the schedule shown in the prior valuation. The maximum period permitted under Section 22F of Chapter 32 of the Massachusetts General Laws is twenty-four years (Fiscal 2040). The amortization is set to increase by 4.00% each year.

- Non-economic assumptions were changed from the January 1, 2013 actuarial valuation. The mortality assumption is based upon the RP-2000 table projected with Generational Mortality, Scale BB. The previous assumption used the RP-2000 table projected 18 years with Scale AA. The net effect of this change increased the accrued liability by $3.5 million.

- The funding level of the Swampscott Retirement System is 48% compared to 44% for the January 1, 2013 actuarial valuation. Using the Market Value of Assets results in a funding ratio of 50%. The funding level is estimated to be below the median for Massachusetts' Contributory Retirement Systems. However, it is difficult to compare funding levels of different systems as they are based on differing actuarial assumptions. The Swampscott Retirement System is valued using a relatively conservative mortality assumption, which has the effect of making the Swampscott Retirement System appear less funded than an equivalent system using a less conservative mortality assumption.

- Assumptions have been set by the Swampscott Retirement Board based in part on recommendations by Stone Consulting, Inc. Experience different from the actuarial assumptions can result in contributions and funding levels different than shown in this report.

January 1, 2015 Actuarial Valuation Results

	January 1, 2015	January 1, 2013	Percentage Change
Funding			
Contribution for Fiscal 2017	$5,012,346		2.6%
Contribution for Fiscal 2017 based on current schedule		$4,885,657	
Members *			
▪ Actives			
a. Number	250	235	6.4%
b. Annual Compensation	$12,270,247	$11,186,504	9.7%
c. Average Annual Compensation	$49,081	$47,602	3.1%
d. Average Attained Age	49.1	49.6	-1.0%
e. Average Past Service	12.9	13.5	-4.4%
▪ Retired, Disabled and Beneficiaries			
a. Number	202	204	-1.0%
b. Total Benefits*	$5,258,166	$4,685,201	12.2%
c. Average Benefits*	$26,031	$22,967	13.3%
d. Average Age	73.9	74.0	-0.1%
▪ Inactives			
a. Number	162	186	-12.9%
Normal Cost			
a. Total Normal Cost as of January 1, 2015	$1,630,368	$1,435,612	13.6%
b. Less Expected Members' Contributions	1,120,862	1,026,763	9.2%
c. Normal Cost to be funded by the Municipality	$509,506	$408,849	24.6%
d. Adjustment to July 1, 2016	28,927	7,595	280.8%
e. Administrative Expense Assumption	179,000	173,823	3.0%
f. Normal Cost Adjusted to July 1, 2016	$727,595	$590,267	23.3%
Actuarial Accrued Liability as of January 1, 2015			
a. Active Members	$37,483,207	$34,216,636	9.5%
b. Inactive Members	581,932	666,192	-12.6%
c. Retired Members and Beneficiaries	50,078,366	43,194,264	15.9%
d. Total	$88,143,505	$78,077,092	12.9%
Unfunded Actuarial Accrued Liability			
a. Actuarial Accrued Liability as of January 1, 2015	$88,143,505	$78,077,092	12.9%
b. Less Actuarial Value of Assets as of January 1, 2015	42,498,707	34,140,831	24.5%
c. Unfunded Actuarial Accrued Liability as of January 1, 2015	$45,644,798	$43,936,261	3.9%
d. Adjustment to July 1, 2016	$1,538,678	$1,936,085	
e. Unfunded Actuarial Accrued Liability as of July 1, 2016	$47,183,476	$45,872,346	

*Excluding State reimbursed COLA

- The data was supplied by the Swampscott Retirement Board. The data was checked under broad parameters for reasonableness. With the assistance of the staff of the Swampscott Retirement Board, we were able to develop a database sufficient for valuation purposes.

History of Active Participants

Valuation Year	Number	Average Age	Average Past Service	Average Ann'l Compensation
2015	250	49.1	12.9	$49,081
2013	235	49.6	13.5	$47,602
2011	226	49.0	13.0	$48,467
2010	241	48.6	12.1	$44,595
2008	252	46.0	11.4	$41,115
2006	282	45.0	9.6	$35,500

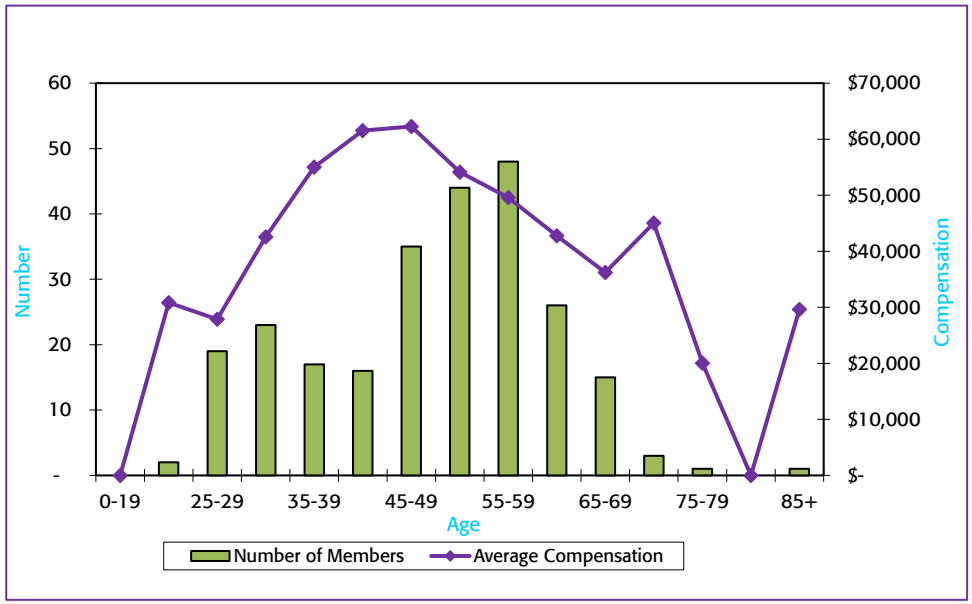
- Employee age has increased by 4.1 years and service has increased by 3.3 years over the course of the past nine years. This is consistent with the trend in the Commonwealth towards an aging of the employee population. Average annual compensation has grown by 38.3% (3.7% annually) over the same time period.

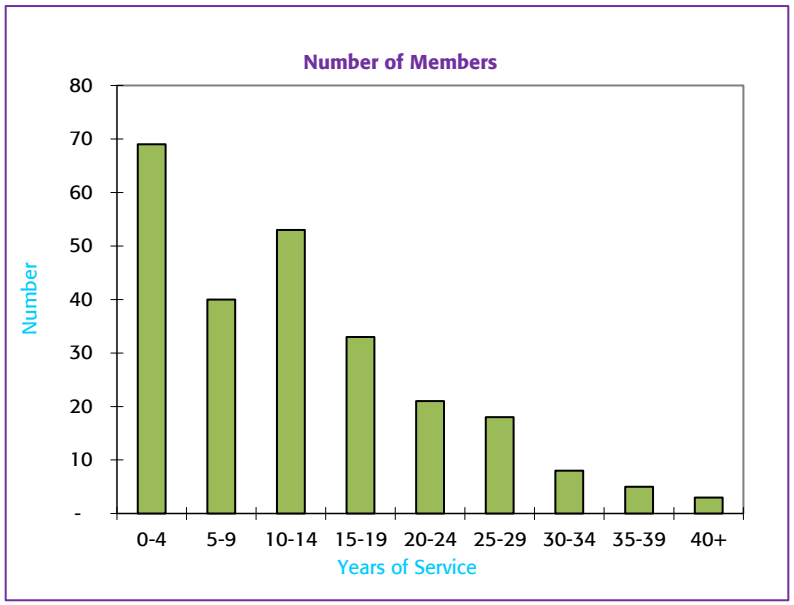
The charts on the following pages summarize demographic information regarding active and retiree members.

Distribution of Plan Members as of January 1, 2015

ACTIVE MEMBERS

AGE	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 + Years	Total	Total Compensation	Average Compensation
0-19	-	-	-	-	-	-	-	-	-	-	$ -	$ -
20-24	2	-	-	-	-	-	-	-	-	2	$ 61,621	$ 30,811
25-29	19	-	-	-	-	-	-	-	-	19	$ 529,207	$ 27,853
30-34	15	6	2	-	-	-	-	-	-	23	$ 978,398	$ 42,539
35-39	5	2	8	2	-	-	-	-	-	17	$ 935,521	$ 55,031
40-44	5	3	3	4	1	-	-	-	-	16	$ 984,276	$ 61,517
45-49	8	3	7	6	10	1	-	-	-	35	$ 2,179,533	$ 62,272
50-54	9	5	15	5	3	6	1	-	-	44	$ 2,380,390	$ 54,100
55-59	4	11	11	6	3	7	5	1	-	48	$ 2,380,815	$ 49,600
60-64	1	5	5	9	1	1	1	3	-	26	$ 1,112,143	$ 42,775
65-69	1	3	2	1	3	3	-	-	2	15	$ 543,490	$ 36,233
70-74	-	1	-	-	-	-	1	-	1	3	$ 135,170	$ 45,057
75-79	-	1	-	-	-	-	-	-	-	1	$ 20,043	$ 20,043
80-84	-	-	-	-	-	-	-	-	-	-	$ -	$ -
85+	-	-	-	-	-	-	-	1	-	1	$ 29,640	$ 29,640
TOTAL	**69**	**40**	**53**	**33**	**21**	**18**	**8**	**5**	**3**	**250**	**$ 12,270,247**	**$ 49,081**





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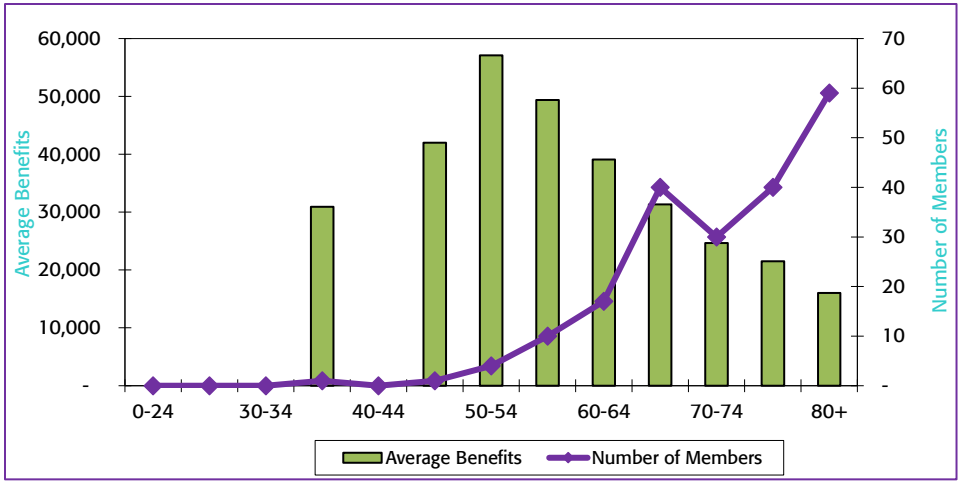
Distribution of Plan Members as of January 1, 2015

RETIRED MEMBERS

Retired Members and Beneficiaries			
Age	Number	Average Benefit	Total Benefit
0-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	-	-	-
45-49	-	-	-
50-54	1	36,222	36,222
55-59	7	53,135	371,945
60-64	13	29,595	384,738
65-69	34	32,174	1,093,923
70-74	28	24,852	695,864
75-79	35	20,185	706,476
80+	55	15,676	862,206
TOTAL	173	$ 23,996	$ 4,151,375

Disabled Members			
Age	Number	Average Benefit	Total Benefit
0-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	1	30,912	30,912
40-44	-	-	-
45-49	1	42,004	42,004
50-54	3	64,045	192,136
55-59	3	40,667	122,000
60-64	4	69,929	279,717
65-69	6	26,495	158,972
70-74	2	21,980	43,961
75-79	5	30,748	153,738
80+	4	20,838	83,352
TOTAL	29	$ 38,165	$ 1,106,791

Total			
Age	Number	Average Benefit	Total Benefit
0-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	1	30,912	30,912
40-44	-	-	-
45-49	1	42,004	42,004
50-54	4	57,089	228,358
55-59	10	49,394	493,945
60-64	17	39,086	664,455
65-69	40	31,322	1,252,895
70-74	30	24,661	739,825
75-79	40	21,505	860,214
80+	59	16,026	945,558
TOTAL	202	$ 26,031	$ 5,258,166



Benefits shown are net of State reimbursed COLA.

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Valuation Methodology

Stone Consulting, Inc. used the Entry Age Normal actuarial funding method in this actuarial valuation. The use of the Entry Age Normal actuarial funding method is consistent with the requirements of Chapter 32 of the Massachusetts General Laws.

NORMAL COST

	January 1, 2015	% of Payroll*
Gross Normal Cost (GNC)	$1,630,368	13.3%
Employees Contribution	$1,120,862	9.1%
Net Normal Cost (NNC)	$509,506	4.2%
Adjusted to Beginning of Fiscal Year 2017	$28,927	
Administrative Expense	$179,000	1.5%
Adjusted Net Normal Cost With Admin. Expense	$727,595	

*Payroll paid in 2014 for employees as of January 1, 2015 is $12,270,247. Payroll for new hires in 2014 was annualized.

- The gross normal cost (GNC) is the "price" of benefits accruing in the current year if the assumptions underlying the normal cost were realized.

- An individual normal cost represents that part of the cost of a member's future benefits that are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and withdrawals) are included in this calculation.

- Anticipated employee contributions to be made during the year are subtracted from the GNC to determine employer normal cost, or net normal cost (NNC).

- Administrative expenses added to the NNC. The administrative expense does not include investment manager and custodial fees. These fees are considered part of the interest rate assumption that is net of fees.

Actuarial Accrued Liability and Funded Status

				January 1, 2015	Percentage Change
Active Actuarial Accrued Liability			$	37,483,207	9.5%
Superannuation	$	34,276,103			
Death	$	782,606			
Disability	$	2,138,357			
Withdrawal	$	286,141			
Retiree, Inactive, Survivor and Beneficiary Actuarial Accrued Liability			$	50,660,298	15.5%
Retirees and Beneficiaries	$	38,179,808			
Disabled	$	11,898,558			
Inactive	$	581,932			
Total Actuarial Accrued Liability (AAL)			$	88,143,505	12.9%
Actuarial Value of Assets (AVA)			$	42,498,707	24.5%
Unfunded Actuarial Accrued Liability			$	45,644,798	3.9%
Funded Ratio (AVA / AAL)					
2015 (8.00% interest rate):		48%			
2013 (8.00% interest rate):		44%			

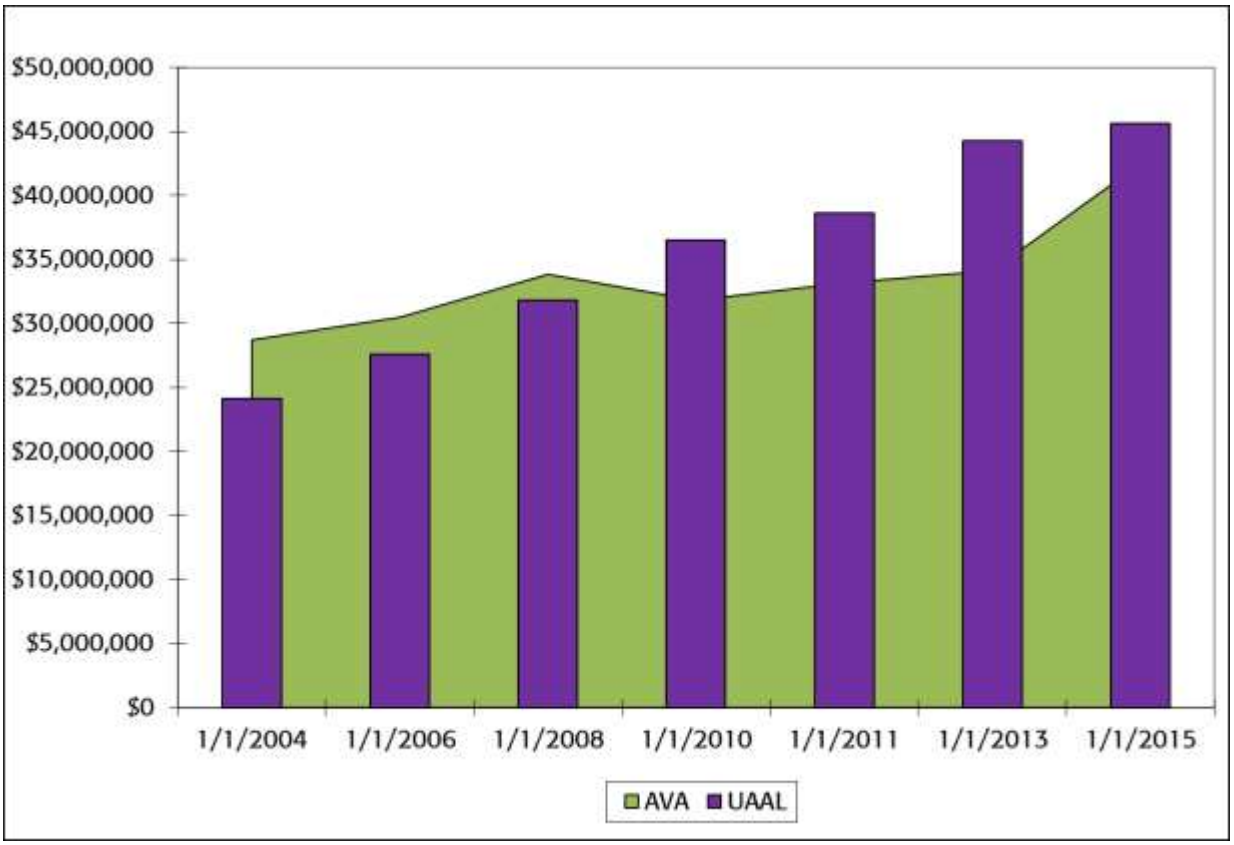
- Actuarial Accrued Liability (AAL) is the "price" of benefits attributable to benefits earned in past years, or in other words, represents today's value of all benefits earned by active and inactive members.

The total AAL is $88,143,505. This along with an actuarial value of assets of $42,498,707 produces a funded status of 48%. This compares to a funded status of 44% for the 2013 valuation. Using the Market Value of Assets, the Unfunded Actuarial Accrued Liability (UAAL) is $43,677,201 compared to a UAAL of $45,644,798 using the AVA.

The funded status is not appropriate for assessing the sufficiency of plan assets for settlement as it includes projection of salaries as well as smoothing methods inherent in the Entry Age Normal actuarial funding method.

The following page contains a chart showing the history of the unfunded actuarial accrued liability (UAAL) and the valuation assets (AVA) over the course of the past seven actuarial valuations

Charts of Selected Actuarial and Demographic Statistics



Development of Funding Schedule

Net Employer Normal Cost for Fiscal 2017 (including admin. expenses)	$	727,595
Net 3(8)(c) Payments		114,101
Amortization		4,170,650
Total Appropriation required for Fiscal 2017	$	5,012,346

- The funding schedule is composed of the normal cost, the net 3(8)(c) payments and the amortization of the actuarial accrued unfunded liability and is adjusted by the administrative expense assumption. The contribution is assumed to be made at the beginning of the fiscal year. The 3(8)(c) payments are the amount that the Swampscott Retirement System pays to or receives from other retirement boards for service that a retiree had with a different retirement system. The net 3(8)(c) payments is the difference between what the Swampscott Retirement System paid out minus what was received by the System.

- The contribution amount for Fiscal 2017 is $5,012,346. The funding schedule is presented on page 11. The schedule's length is fifteen (15) years (for the fresh start base) which is one year longer than the remaining 14 years from the January 1, 2013 valuation. The maximum funding schedule length allowed by Section 22F of Chapter 32 of the Massachusetts General Laws is twenty-four years to Fiscal 2040.

- In developing the funding schedule, we used a fresh start approach in which the unfunded actuarial accrued liability (UAAL), other than the UAAL due to past early retirement incentives (ERIs), is reamortized instead of maintaining the existing amortization amount and separately amortizing the actuarial gain or loss. The use of a fresh-start approach can result in a funding schedule in which the changes in contribution amounts from year to year are more consistent. The amortization is set to increase by 4.00% each year.

- Asset gains/losses which have not been recognized yet (see asset and asset smoothing discussions) have not been reflected in the schedule. The contribution amounts shown for Fiscal 2019 and afterwards will reflect portions of these gains/losses as well as other asset and experience gains/losses and assumption changes.

- We expect that if the actuarial assumptions are realized, the system should become fully funded and future contributions should be reasonably related to the contributions shown in the funding schedule. The funding schedule assumes a static population where the future population has the same demographic makeup as the existing population. Shifts in employee population and in the level of employee contribution percentages as well as the effect of pension reform have not been reflected. We expect these to result in lower contributions than shown in the funding schedule.

FUNDING SCHEDULE

Fiscal Year	Normal Cost	Unfunded Liability	Funding Amortization of UAAL	Net 3(8)(c) Payments	Schedule Contribution
2017	727,595	47,183,476	4,170,650	114,101	5,012,346
2018	754,880	46,453,853	4,330,612	114,101	5,199,593
2019	783,188	45,493,100	4,496,972	114,101	5,394,261
2020	812,557	44,275,818	4,538,727	114,101	5,465,385
2021	843,028	42,916,059	4,678,329	114,101	5,635,459
2022	874,642	41,296,748	4,865,463	114,101	5,854,205
2023	907,441	39,345,788	5,060,081	114,101	6,081,623
2024	941,470	37,028,563	5,262,484	114,101	6,318,055
2025	976,775	34,307,365	5,472,984	114,101	6,563,860
2026	1,013,404	31,141,132	5,691,903	114,101	6,819,408
2027	1,051,407	27,485,168	5,919,579	114,101	7,085,087
2028	1,090,835	23,290,836	6,156,362	114,101	7,361,298
2029	1,131,741	18,505,231	6,402,617	114,101	7,648,459
2030	1,174,181	13,070,824	6,658,721	114,101	7,947,003
2031	1,218,213	6,925,070	6,925,070	114,101	8,257,384
2032	1,263,896	-	-	114,101	1,377,997

Amortization of Unfunded Liability as of July 1, 2015

Year	Type	Original Amort. Amount	Percentage Increasing	Original # of Years	Current Amort. Amount	Years Remaining
2002	ERI	131,261	0.00%	18	131,261	3
2003	ERI	40,333	0.00%	18	40,333	4
2017	Fresh Start	3,999,056	4.00%	15	3,999,056	15

Notes on Amortization of Unfunded Liability

Year is the year the amortization base was established. **Type** is the reason for the creation of the base. **Original Amortization Amount** is the annual amortization amount when the base was established. **Percentage Increasing** is the percentage that the Original Amortization Amount increases per year. **Original # of Years** is the number of years over which the base is being amortized. **Current Amortization Amount** is the amortization payment amount for this year. **Years Remaining** is the number of years left to amortize the base.

Assumptions and Methodology Summary

The principal actuarial assumptions used in this valuation are the same as the assumptions used in the previous valuation, except where noted, and are summarized in the following table:

Valuation Date	January 1, 2015 Valuation
Interest Rate	8.00% (same as prior valuation).
Salary Increase	3.75% Ultimate rate, plus the following steps and longevity:

Yrs. of Service	1	2	3	4	5
Groups 1 & 2	4.25%	3.75%	1.25%	1.25%	3.75%
Police	4.25%	9.25%	4.25%	9.25%	-
Fire	5.25%	5.25%	3.25%	-	-

COLA	3% of $13,000
COLA Frequency	Granted every year
Mortality	RP-2000 table projected with Generational Mortality, Scale BB. For members retired under an Accidental Disability (job-related), 40% of deaths are assumed to be from the same cause as the disability. Disabled mortality RP-2000 table projected with Generational Mortality, Scale BB, ages set forward 2 years. (Prior valuation used RP-2000 table projected 18 years with Scale AA.)
Overall Disability	Groups 1 and 2 45% ordinary disability 55% accidental disability Group 4 10% ordinary disability 90% accidental disability
Retirement Rates	Groups 1 and 2 Ages 55 – 70 Group 4 Ages 50 – 65
Administrative Expense	$179,000 budget estimated for FY 2017 provided by Swampscott Retirement Board.

Assets

a.	Cash	$	561,256.01
b.	Short Term Investments		414,167.44
c.	Equities		1,945,955.90
d.	Pooled Domestic Equity Funds		6,173,442.38
e.	Pooled Alternative Investments		523,108.17
f.	Pooled Real Estate Funds		1,506,987.00
g.	PRIT Cash		23.15
h.	PRIT FUND		33,394,390.63
i.	Sub-Total:	$	44,519,330.68
j.	Interest Due and Accrued	$	2.48
k.	Accounts Receivable		1,083.32
l.	Accounts Payable		(54,112.37)
m.	Sub-Total:	$	(53,026.57)
	Market Value of Assets [(i) + (m)]	$	44,466,304.11

- We were furnished with the System's annual report by the Board. The market value of assets as of December 31, 2014 (adjusted for payables and receivables) is $44,466,304.11.

- The asset allocation is approximately 17% fixed income, cash, receivables and payables and 83% equities, alternative investments, hedge funds and similar types of investments. Historically, 9% to 11% has been the expected long-term rate of return for equities, and 6% to 7% has been the expected long-term rate of return for fixed income securities. Many economists and investment professionals are projecting lower returns of 6.25% to 9.00% for equities and 3.65% to 6.00% for fixed income securities. In light of these projections, as well as historical investment returns, the 8.00% interest rate assumption is within the reasonable assumption range. We have used a building block method to develop the interest rate assumption (which is the same as the assumed rate of investment return). We encourage close monitoring for changes in investment performance against expectations.

- Actuarial value of assets (AVA) of $42,498,707 is based on a five-year smoothing method. Investment gains or losses above or below the expected rate of investment return are recognized over 5 years, 20% per year. The AVA must be no more than 110% of the market value of assets and no less than 90% of the market value of assets.

Calculation of Valuation Assets as of January 1, 2015

FIVE-YEAR ASSET SMOOTHING

1. Market value of assets including receivable/payable as of 01/01/2015 — $44,466,304

2. Phase-in of asset gains and losses

	Plan Year (1)	Original Amount (2)	Percent Unrecognized (3)	Amount Unrecognized (2) x (3)
a.	2014	$331,431	80%	$265,145
b.	2013	$2,853,951	60%	$1,712,370
c.	2012	$1,621,329	40%	$648,532
d.	2011	($3,292,249)	20%	($658,450)
e.	2010	$755,078	0%	$0
f.	Total			$1,967,597

3. Valuation assets without corridor as of 01/01/2015 — $42,498,707
   (1. - 2.f.)

4. Corridor Check
   a. 90% of Market Value — $40,019,674
   b. 110% of Market Value — $48,912,935

5. Valuation assets with corridor as of 01/01/2015 — $42,498,707
   (3. within Corridor)

6. Calculation of return on valuation assets

   a. Valuation assets as of 01/01/2014 — $34,140,831

   b. ER contribs + EE contribs - Ben Pymts - Expenses — $1,240,037

   c. Actual return on valuation assets — $7,117,838
      5. - (6.a. + 6.b.)

   d. Weighted value of valuation assets — $34,990,713

   e. Return on valuation assets — 20.3%
      (6.c. / 6.d.)

   f. Annualized return on assets — 9.7%

Schedule of Funding Progress and Notes

SCHEDULE OF FUNDING PROGRESS
(Dollars In Thousands)

Actuarial Valuation Date	Actuarial Value of Assets A	Actuarial Accrued Liability B	Unfunded AAL (UAAL) B-A	Funded Ratio A/B	Covered Payroll C	UAAL as a % of Covered Payroll (B-A)/C
1/1/2015	$42,499	$88,144	$45,645	48%	$12,270	372%
1/1/2013	$34,141	$78,077	$43,936	44%	$11,187	393%
1/1/2011	$33,178	$71,822	$38,644	46%	$10,954	353%
1/1/2010	$31,828	$68,326	$36,499	47%	$10,747	340%
1/1/2008	$33,846	$65,637	$31,792	52%	$10,842	293%

NOTES TO SCHEDULES

Additional information as of the latest actuarial valuation follows:

Valuation Date	1/1/2015
Actuarial cost method	Entry Age Normal
Amortization method	4.00% amortization increases
Remaining amortization period	15 years for the fresh start base
Asset valuation method	Market value adjusted by accounts payable and receivables adjusted to phase in over 5 years investment gains or losses above or below the expected rate of investment return. The actuarial value of assets must be no less than 90% of the adjusted market value nor more than 110% of the adjusted market value. Market value of assets is $44,466,304.11
Actuarial assumptions:	
Projected Salary Increases	3.75% ultimate rate with the following steps:

Service	1	2	3	4	5
Grps 1 & 2	4.25%	3.75%	1.25%	1.25%	3.75%
Police	4.25%	9.25%	4.25%	9.25%	-
Fire	5.25%	5.25%	3.25%	-	-

Investment Rate of Return	8.00% per year

PERAC Information Disclosure

The most recent actuarial valuation of the System was prepared by Stone Consulting, Inc. as of January 1, 2015

The normal cost for employees on that date was:	$1,120,862	9.1% of payroll
The normal cost for the employer was:	$509,506	4.2% of payroll

The actuarial liability for active members was:	$37,483,207
The actuarial liability for retired members was (includes inactives):	$50,660,298
Total actuarial accrued liability:	$88,143,505
System assets as of that date ($44,466,304.11 Market Value):	$42,498,707
Unfunded actuarial accrued liability:	$45,644,798

The ratio of system's assets to total actuarial liability was:	48%

As of that date the total covered employee payroll was:	$12,270,247

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	8.00% per annum
Rate of Salary Increase:	Select and ultimate rate (3.75% ultimate rate)

SCHEDULE OF FUNDING PROGRESS (Dollars in $000's)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
1/1/2015	$42,499	$88,144	$45,645	48%	$12,270	372%
1/1/2013	$34,141	$78,077	$43,936	44%	$11,187	393%
1/1/2011	$33,178	$71,822	$38,644	46%	$10,954	353%
1/1/2010	$31,828	$68,326	$36,499	47%	$10,747	340%
1/1/2008	$33,846	$65,637	$31,792	52%	$10,842	293%

Actuarial Methods and Assumptions

ACTUARIAL METHODS

Actuarial Cost Method

The Entry Age Normal Actuarial Cost Method has been used in this valuation. Under this method, the normal cost is the amount calculated as the level percentage of compensation necessary to fully fund the prospective benefits from each member's entry age to retirement age.

The actuarial accrued liability represents the theoretical accumulation of all prior years' normal costs for the plan members as if the program had always been in effect. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over plan assets.

Asset Valuation Method

Market value of assets (adjusted by payables and receivables) adjusted to phase in investment gains or losses above or below the expected rate of investment return over a five-year rolling period. The phase-in is 20% for year one, 40% for year two, 60% for year three, 80% for year four and finally 100% for year five. The actuarial value of assets may be no less than 90%, or more than 110% of the market value of assets plus payables and receivables.

Fiscal Year Adjustment

The actuarial results are adjusted by the valuation interest rate and salary scale to the beginning of Fiscal Year 2017. The unfunded actuarial accrued liability is rolled forward with normal cost and further adjusted by anticipated contributions and interest.

ACTUARIAL ASSUMPTIONS

Investment Return

8.00% per year net of investment expenses.

Regular Interest Rate Credited to Annuity Savings Account

2% per year.

Salary Increases

Select and ultimate salary assumption – 3.75% ultimate rate with the following steps:

Service	1	2	3	4	5
Grps 1 & 2	4.25%	3.75%	1.25%	1.25%	3.75%
Police	4.25%	9.25%	4.25%	9.25%	-
Fire	5.25%	5.25%	3.25%	-	-

Actuarial Methods and Assumptions
(Continued)

Withdrawal Prior to Retirement

The rates shown at the following sample ages illustrate the withdrawal assumption. Withdrawal rates are set to zero if the retirement rate at that age is nonzero.

Rate of Withdrawal

Service	Group 1 and 2	Group 4
0	15%	1.5%
1	12%	1.5%
2	10%	1.5%
3	9%	1.5%
4	8%	1.5%
5	7.6%	1.5%
10	5.4%	1.5%
15	3.3%	0.0%
20	2.0%	0.0%
25	1.0%	0.0%
30+	0.0%	0.0%

Disability Prior to Retirement

The rates shown at the following sample ages illustrate the assumption regarding the incidence of disability:

Rate of Disability

Age	Group 1 and 2	Group 4
20	0.01%	0.10%
25	0.02%	0.20%
30	0.03%	0.30%
35	0.06%	0.30%
40	0.10%	0.30%
45	0.15%	1.00%
50	0.19%	1.25%
55	0.24%	1.20%
60	0.28%	0.85%

Disability is assumed to be 45% ordinary and 55% accidental for Group 1 and 2 and 10% ordinary and 90% accidental for Group 4.

Actuarial Methods and Assumptions
(Continued)

Rates of Retirement

The rates shown at the following ages illustrate the assumption regarding the incidence of retirement, once the member has achieved 10 years of service:

Age	Group 1& 2 Male	Group 1 & 2 Female	Group 4	Hired after 4/1/2012		
				Group 1& 2 Male	Group 1 & 2 Female	Group 4
50	1%	1.5%	2%	0%	0%	1.5%
51	1%	1.5%	2%	0%	0%	1.5%
52	1%	2.0%	2%	0%	0%	1.5%
53	1%	2.5%	2%	0%	0%	1.5%
54	2%	2.5%	7.5%	0%	0%	5%
55	2%	5.5%	15%	0%	0%	10%
56	2.5%	6.5%	10%	0%	0%	7%
57	2.5%	6.5%	10%	0%	0%	20%
58	5%	6.5%	10%	0%	0%	10%
59	6.5%	6.5%	15%	0%	0%	15%
60	12%	5%	20%	25%	30%	20%
61	20%	13%	20%	20%	13%	20%
62	30%	15%	25%	30%	15%	25%
63	25%	12.5%	25%	25%	12.5%	25%
64	22%	18%	30%	22%	18%	30%
65	40%	15%	100%	40%	15%	100%
66	25%	20%	N/A	25%	20%	N/A
67	25%	20%	N/A	25%	20%	N/A
68	30%	25%	N/A	30%	25%	N/A
69	30%	20%	N/A	30%	20%	N/A
70	100%	100%	N/A	100%	100%	N/A

Mortality

RP-2000 table projected with Generational Mortality, Scale BB (sex-distinct). (Prior valuation used RP-2000 table projected 18 years with Scale AA). During employment the healthy employee mortality table is used. Post-employment the healthy annuitant table is used. In-service death is assumed to be 55% accidental for group 1 and 2 and 90% accidental for group 4.

Disabled Life Mortality

RP-2000 table projected with Generational Mortality, Scale BB for healthy annuitants, set-forward by 2 years (sex-distinct). Death is assumed to be due to the same cause as the disability 40% of the time. (Prior valuation used RP-2000 table projected 18 years with Scale AA).

Actuarial Methods and Assumptions
(Continued)

Family Composition

Members assumed married with 2 dependent children – one male and one female both age 15; age difference between member and spouse assumed to be 3 years (the male being the older).

Cost-of-Living Increases

A 3% COLA on the first $13,000 of a member's retirement allowance is assumed to be granted every year.

Administrative Expenses

Estimated budgeted amount of $179,000 for the Fiscal Year 2017 excluding investment management fees and custodial fee is added to the Normal Cost.

Net 3(8)(c)

Net 3(8)(c) payments are assumed to be the same level as the past calendar year for all future years.

Step Increases

Step increases are assumed to be part of the salary increase assumption.

Credited Service

All service is assumed to be due to employment with the municipality.

Contribution Timing

Contributions are assumed to be made at the beginning of the fiscal year.

Total Payroll Increase

The total payroll is assumed to increase at 3.75% per year.

Valuation Date

January 1, 2015.

Summary of Principal Provisions

1. PARTICIPANT

Participation is mandatory for all full-time employees whose employment commences before age 65. There are three classes of members in the retirement system:

- Group 1: general employees
- Group 2: employees in specified hazardous occupations (e.g., electricians)
- Group 4: police and firefighters

2. MEMBER CONTRIBUTIONS

Member contributions vary depending upon date hired as follows:

Date of Hire	Member Contribution Rate
Prior to 1975	5% of Pay
1975 – 1983	7% of Pay
1984 – June 30, 1996	8% of Pay
After June 30, 1996	9% of Pay

Members hired after 1978 contribute an additional 2% of pay over $30,000.

3. PAY

a. Pay

Gross regular compensation excluding bonuses, overtime, severance pay, unused sick pay, and other similar compensation.

b. Average Pay

The average of pay during the three consecutive years that produce the highest average or, if greater, during the last three years (whether or not consecutive) preceding retirement. For members hired after April 1, 2012, five-year averages will be used.

4. CREDITED SERVICE

Period during which an employee contributes to the retirement system plus certain periods of military service and "purchased" service.

5. SERVICE RETIREMENT

a. Eligibility

1) Attainment of age 55 and completion of ten years of credited service or at any age with completion of 20 years of service. If hired prior to 1978 or a member of Group 4, the completion of ten years of service is not required.

2) Hired after April 1, 2012 and Group 1 – Age 60 and Completion of 10 years of credited service. Group 2 – Age 55 and completion of 10 years of service. Group 4 – Age 55.

Summary of Principal Provisions (Continued)

b. Retirement Allowance

Determined as the product of the member's benefit percentage, average pay and credited service, where the benefit percentage is shown below (maximum allowance of 80% of average pay):

Benefit Percentage	Group 1	Group 2	Group 4
2.5%	65+	60+	55+
2.4	64	59	54
2.3	63	58	53
2.2	62	57	52
2.1	61	56	51
2.0	60	55	50
1.9	59	N/A	49
1.8	58	N/A	48
1.7	57	N/A	47
1.6	56	N/A	46
1.5	55	N/A	45
	Hired after April 1, 2012*		
2.5%	67+	62+	57+
2.35	66	61	56
2.20	65	60	55
2.05	64	59	54
1.90	63	58	53
1.75	62	57	52
1.60	61	56	51
1.45	60	55	50

*Reduction is .125% for each year early instead of .15% per year for employees with over 30 years of service.

In addition, veterans receive an additional $15 per year for each year of credited service up to 20 years

6. DEFERRED VESTED RETIREMENT

a. Eligibility

Completion of 10 years of credited service (for elected and appointed members, 6 years in the event of involuntary termination).

b. Retirement Allowance

Determined in the same manner as "Service Retirement" section above with the member eligible to start collecting a benefit at age 55, (or age 57 for post-April 1, 2012 hires) or defer until later at his or her discretion. If a member chooses, his or her contributions with interest may be withdrawn. The amount of interest he or she will receive depends on length of service and whether or not the termination of employment was voluntary.

Summary of Principal Provisions (Continued)

7. ORDINARY DISABILITY RETIREMENT

a. Eligibility

Non-job related disability after completion of 10 years of credited service.

b. Retirement Allowance

Determined in the same manner as "Service Retirement" section and calculated as if the member had attained age 55 (or age 57 for those hired after April 1, 2012), if younger. Veterans receive 50% of pay (during final year) plus an annuity based on accumulated member contributions with interest.

8. ACCIDENTAL DISABILITY RETIREMENT

a. Eligibility

Disabled as a result of an accident in the performance of duties. No age or service requirement.

b. Retirement Allowance

72% of pay plus an annuity based on accumulated member contributions with interest. Also, a dependent's allowance per year for each child. Total allowance not to exceed 100% of pay (75% for members hired after 1987).

9. NON-OCCUPATIONAL DEATH

a. Eligibility

Dies while in active service, but not due to occupational injury.

b. Retirement Allowance

Benefit as if Option C had been elected (see below) and member had attained age 55 (or age 57 for those hired after April 1, 2012) if younger. Minimum monthly benefits provided as follows: spouse - $500, first child - $120, each additional child - $90

10. OCCUPATIONAL DEATH

a. Eligibility

Dies as a result of an occupational injury.

b. Benefit Amount

72% of pay plus refund of annuity savings fund balance. In the case of an accidental disability retiree who dies of the same cause, the beneficiary receives 72% of the last 12 months salary or the current pension amount, whichever is greater.

Summary of Principal Provisions
(Continued)

11. COST-OF-LIVING INCREASES

An increase of up to 3% applied to the first $13,000 of annual benefit. Funded by the Municipality from Fiscal Year 1999. Percentage increase is voted on each year by the Retirement Board. Cost-of-living increases granted during Fiscal Year 1982 through Fiscal 1998 are reimbursed by the Commonwealth.

12. OPTIONAL FORMS OF PAYMENT

- Option A

Allowance payable monthly for the life of the member.

- Option B

Allowance payable monthly for the life of the member with a guarantee of remaining member contributions with interest.

- Option C

Allowance payable monthly for the life of the member with 66-2/3% continuing to the member's beneficiary upon the member's death. If the beneficiary predeceases the member, the allowance amount "pops up" to the non-reduced amount.

Glossary of Terms

- Actuarial Accrued Liability

  The portion of the Present Value of Benefits that is attributable to past service.

- Actuarial Assets

  Market value of assets (adjusted by payables and receivables) adjusted to phase in investment gains or losses above or below the expected rate of investment return over a five-year rolling period. The phase-in is 20% for year one, 40% for year two, 60% for year three, 80% for year four and finally 100% for year five. The actuarial value of assets may be no less than 90%, or more than 110% of the market value of assets plus payables and receivables.

- Actuarial Assumptions

  Estimates are made as to the occurrence of certain events that determine the level of benefits to be paid and how long they will be provided. The more important actuarial assumptions include the investment return on assets, salary increases and the rates of turnover, disability, retirement and mortality.

- Actuarial Cost Method

  The procedure that is used to allocate the present value of benefits between the liability that is attributable to past service (Actuarial Accrued Liability) and that attributable to future service.

- GASB

  Government Accounting Standards Board (issues guidance for disclosure of retirement system liabilities).

- Normal Cost

  The portion of the Present Value of Benefits that is attributable to benefits to be earned in the coming year.

- PERAC

  Public Employee Retirement Administration Commission, a division of the State government which has regulatory authority over the administration of the retirement system.

- Present Value of Benefits

  Represents the dollar value today of all benefits expected to be earned by current members if all actuarial assumptions are exactly realized.

- PRIT

  Pension Reserves Investment Trust Fund is the state controlled and administered fund for the investment of assets for members of the retirement system.

- Unfunded Actuarial Accrued Liability

  That portion of the Actuarial Accrued Liability not covered by System Assets.